

CLAIMS

1. A hollow needle applicator (100; 500) for administering a fluid from a cartridge
5 (110; 510) which has a fixed needle (107; 507) comprising an applicator body
(101; 501) in which the cartridge, including its needle, is mounted, a force
applying actuator (120; 520) mounted in the body (101; 501) for movement
therein to drive the cartridge (110; 510) or a carrier for the cartridge forwards to
extend the needle (107; 507) from the applicator body (101; 501), in which
10 respect the actuator (120; 520) and the cartridge (110; 501), or its carrier, have
co-operating drive and driven parts (126, 110E; 526, 510E; 826, 810E), and
release formation means (128; 528; 828) provided in or on the body (101; 501)
to release the said co-operating parts after predetermined movement of the
cartridge (110; 510) to extend the needle (107; 507) from the applicator (101;
15 501).
2. An applicator according to claim 1 wherein the release formation means
comprises at least one deflector element (128; 528; 828) projecting internally of
the applicator body (101).
20
3. An applicator according to claim 2 wherein the or each deflector element (128;
528; 828) is formed integrally with the applicator body as part of an injection
moulded unit.
- 25 4. An applicator according to claim 2 or 3 wherein the or each deflector element
(128; 528; 828) projects rearwardly from a forward portion (101B) of the

applicator body (101) and substantially parallel to the axis of the applicator body.

- 5 5. An applicator according to any preceding claim wherein the co-operating driving part of the actuator (120; 520) comprises at least one deflectable extension (126E; 526E) of the actuator.
- 10 6. An applicator according to claim 5 wherein the release formation means (128; 528) are arranged to deflect the co-operating driving part (126; 526) of the actuator (120; 520) outwardly of the co-operating driven part (110E; 510E) of the cartridge (110; 510) or its carrier.
- 15 7. An applicator according to any preceding claim wherein the co-operating driving part (126; 526) of the actuator (120; 520) and the co-operating driven part (110E; 510E) of the cartridge or its carrier are in direct contact with each other prior to their release by the release formation means.
- 20 8. An applicator according to any of claims 1 to 4 wherein the co-operating driving part of the actuator comprises at least one narrow extension (826) of the actuator and this is coupled to the driven part or parts (810E) of the cartridge by way of a drive coupling ring (850) which is provided with spaced apertures (852, 853) and is rotatable by the release formation means (828) to allow passage of the driving and driven parts (826, 810E) through those apertures (852, 853)

9. An applicator according to any preceding claim including a drive spring (125; 525) to drive the actuator (120; 520) and a release mechanism (118; 518) for said spring.

5

10. An applicator according to any preceding claim wherein the movement of the cartridge (110; 510) to extend the needle (107; 507) from the applicator body (101; 501) is limited by abutment of a shoulder (110S; 512S) of the cartridge (110; 510) or its carrier against an internal ledge or other projection (101L, 108; 501L) of the applicator body (101; 501).

10

11. An applicator according to any preceding claim further including a piston assembly (111, 131, 133; 511, 531, 533) located within the cartridge (110; 510) and slidable therein to discharge the fluid contents of the cartridge via the needle (107; 507), wherein the actuator (120; 520) has at least one additional force transmitting part (132; 532) which provides a coupling with the piston assembly effective to displace the piston assembly within the cartridge to discharge contents of the cartridge only after release of the aforesaid co-operating parts of the actuator (120; 520) and the cartridge (110; 510) or its carrier.

15

20

12. An applicator according to claim 11 wherein the additional force transmitting means (132E; 532E) of the actuator (120; 520) for contents discharge are axially parallel to the driving parts (126; 526) of the actuator for needle extension.

13. An applicator according to claim 12 wherein the additional force transmitting means (132E; 532E) of the actuator (120; 520) for contents discharge are arranged radially inside the co-operating driving parts (126; 526) of the actuator for needle extension.
14. An applicator according to any of claims 11 to 13 including provision for automatic needle retraction after cartridge contents discharge comprising spring means (113; 513) arranged within a forward portion (101B; 501B) of the applicator body (101; 501) to act between the applicator and the cartridge (110; 510) to which the needle (107; 507) is fixed, and means for release of the coupling between the additional force transmitting part or parts (132; 532) of the actuator (120; 520) and the piston assembly (111, 131, 133; 511, 531, 533).
15. An applicator according to claim 14 wherein the piston assembly comprises a deformable piston (111; 511), a piston rod (131; 531) which transmits force to the piston from the actuator (120; 520) and triggering means (133; 533) which is movable by the piston, when deformed into the end of the cartridge (110; 510), to release the coupling between the force transmitting part or parts (132; 532) of the actuator (120; 520) and the piston assembly to bring about needle retraction.
16. An applicator according to claim 15 wherein the piston rod (131) is hollow and has driven extension parts (131E) which co-operate with the additional force

transmitting part or parts (132) of the actuator (120) and are deflectable away from each other upon release of said drive coupling and the triggering means comprises a rod (133) which is slidable within the hollow piston rod to deflect said parts (131E).

5

17. An applicator according to claim 15 wherein the piston rod (531) has driven extension parts (531E) which co-operate with the additional force transmitting part or parts (532E) of the actuator (520) and are deflectable towards each other upon release of said drive coupling and the triggering means comprises a collar (533) slidable about the piston rod (531) to deflect said parts (531E).

10

18. A hollow needle applicator (100; 500) for administering a fluid from a cartridge (110; 510) which has a fixed needle (107; 507) comprising an applicator body (101; 501) in which the cartridge is mounted, a piston assembly (111, 131, 133; 511, 531, 533) located within the cartridge (110; 510) and slidable therein to discharge the fluid contents of the cartridge via the needle (107; 501), a force applying actuator (120; 520) mounted into the body (101; 501) and having at least one force transmitting part (132; 532) which provides a coupling with the piston assembly effective to displace the piston assembly within the cartridge to discharge contents of the cartridge, provision for automatic needle retraction after cartridge contents discharge comprising spring means (113; 513) arranged within a forward portion (101B; 501B) of the applicator body (101; 501) to act between the applicator (101; 501) and the cartridge (110; 510) to which the needle (107; 507) is fixed, and means for release of the coupling between the

15

20

force transmitting part or parts (132; 532) of the actuator (120; 520) and the piston assembly (111, 131, 133; 511, 531, 533), **characterised in that** the piston assembly comprises deformable piston (111; 511) a piston rod (131; 531) which transmits force to the piston from the actuator (120; 520) and triggering means (133; 533) which is movable by the piston, when deformed into the end of the cartridge, to release the coupling between the force transmitting part or parts (132; 532) of the actuator (120; 520) from the piston assembly and bring about needle retraction.

- 10 19. An applicator according to claim 18 wherein the piston rod (131) is hollow and has driven extension parts (131E) which co-operate with the force transmitting part or parts (132) of the actuator (120) and are deflectable away from each other upon release of said drive coupling and the triggering means comprises a rod (133) which is slidable within the hollow piston rod to deflect said parts
- 15 (131E).
20. An applicator according to claim 18 wherein the piston rod (531) has driven extension parts (531E) which co-operate with the force transmitting part or parts (532E) of the actuator (520) and are deflectable towards each other upon release
- 20 of said drive coupling and the triggering means comprises a collar slidable about the piston rod (531) to deflect said parts (531E).
21. An applicator according to claim 18 wherein the piston rod has driven extension parts which co-operate with the force transmitting part or parts of the actuator

and are coupled thereto by way of a drive coupling ring which is provided with spaced apertures and is rotatable by the triggering means to allow passage of the force transmitting and driven extension parts through these apertures.